Reducing Threats and Dangers to the Nation

Throughout the Laboratory's history, researchers have provided technology, analysis, and expertise to help reduce the dangers facing the nation. During the Cold War, a major focus was arms control with the Soviet Union. With the collapse of the Soviet Union, today's grave concern is the threat of the spread of materials and expertise related to weapons of mass destruction (nuclear, biological, and chemical) from Russia to terrorists or countries of concern.

Cooperative Support to Enhance the U.S.–Russian Relationship

Through the Materials Protection, Control and Accounting (MPC&A) program, Russia is receiving assistance to improve protection of its vast quantities of Soviet-legacy nuclear material. Laboratory researchers lead project teams for Chelyabinsk-70, Sverdlovsk-44, Bochvar Institute, and Krasnoyarsk-45 and provide project support for seven other sites. Of the various laboratories involved in the MPC&A program, Livermore is unique in its role with the Russian Navy. Since 1997, upgrades for four nuclear refueling ships have been completed and commissioned, and cooperative work at Russian naval nuclear weapon storage sites is under way. Through the Second Line of Defense program, the Laboratory is working with the Russian Customs Service to curtail the smuggling of items of nuclear proliferation concern by equipping high-risk border crossings with radiation detection equipment and training front-line customs officials in the use of the equipment.

To help accelerate the downsizing of the Russian weapons complex and to prevent displaced weapons workers from seeking employment with potential proliferators, the U.S. and Russia have launched the Nuclear Cities Initiative. In September 2001, lengthy negotiations led by Livermore scientists culminated in a formal partnership agreement between the Avangard Electromechanical Plant (a weapons assembly facility) and Fresenius Medical Care (the world's largest provider of products for individuals with chronic kidney failure) to establish a commercial medical products manufacturing facility at Sarov. This agreement represents a major milestone in U.S. efforts to engage a Russian serial production facility.

Cooperation through science and technology can provide an avenue of engagement in regions of U.S. national security concern, such as the Middle East and Central Asia. Laboratory researchers are participating in regional cooperative projects on such topics as border security, seismology, and water resources. These projects are providing tangible benefits with respect to reducing smuggling across borders and mitigating environmental stresses that undermine public health, the economy and standard of living, and ultimately the stability of the region.

1950s

Livermore conducted the RAINIER event, the first contained underground nuclear test. The data gathered on underground explosion phenomenology provided the technical basis for subsequent agreement to the Limited Test Ban Treaty, which banned testing in the atmosphere, outer space, or underwater and established systems for monitoring nuclear test activities worldwide.

1960s

Photo: Lawrence Berkeley National Lab

Many Laboratory scientists participated in the technical working groups that supported Limited Test Ban Treaty (LTBT) negotiations, and these activities gave rise to new programs to detect nuclear explosions. President Kennedy and Premier Khrushchev signed the LTBT in 1963, and President Johnson signed the Nuclear Non-Proliferation Treaty (NPT) in 1968.

1970s

Photo: Bettman/UPI

Former Laboratory Director Michael May served as Technical Adviser to the Threshold Test Ban Treaty (TTBT) negotiations (1974) and as U.S. Delegate to the Strategic Arms Limitations Talks (SALT, 1974–76). Signed but never ratified, the SALT II agreement capped the growth of strategic nuclear arsenals during the Cold War.

1980s

TTBT verification issues were resolved with the Joint Verification Experiment (JVE), a pair of nuclear tests jointly carried out at the U.S. and Soviet test sites. Laboratory experts provided technical advice for both the JVE and the negotiations for the Strategic Arms Reduction Treaties (START, 1991–96), which would limit and then eliminate MIRVed ICBMs.

1990s

U.S. nuclear testing ceased, and a Comprehensive Nuclear Test Ban Treaty (CTBT) was signed. Livermore technical advisors served at the CTBT talks and preparatory commission. After the Soviet Union collapsed, Livermore, Los Alamos, and Sandia national laboratories established cooperative programs with former-Soviet labs to prevent the spread of weapons expertise or materials to other nations.